



# Effective Health Care

## Impact of Bed and Mattress Types on Outcomes of Bedridden Patients and Their Caregivers Nomination Summary Document

### Results of Topic Selection Process & Next Steps

- The topic, *Impact of Bed and Mattress Types on Outcomes of Bedridden Patients and Their Caregivers*, is not feasible for a full systematic review due to the limited data available for a review at this time.

### Topic Description

**Nominator(s):** Individual

**Nomination Summary:** The nominator is interested in the health outcomes and economic impacts of a dynamic bed he/she has developed called the 4flex Care Bed™ for use by bedridden patients.

**Staff-Generated PICO**

**Population(s):** Patients who are bed-ridden; patients receiving long-term care and with limited mobility; the caregivers of these patients

**Intervention(s):** Different types of beds or mattresses

**Comparator(s):** Other types of beds or mattresses

**Outcome(s):** Frequency of pressure ulcers; health-related quality of life (HRQoL); functional status; need for hospitalization; morbidity/mortality; risk of back injury in caregivers (nursing or family members)

**Setting(s):** Home, long-term care facilities and rehabilitation facilities

**Key Questions from Nominator:** “With the utilization of a revolutionary side-turning hospital bed, 4flex Care Bed™, in which ways could myriads of patients, caregivers and nurses alike, and also the United States Government benefit?”

We expanded the scope of this question to address all types of beds or mattresses which could improve HRQoL and clinical outcomes for patients, and reduce injury to nurses and other caregivers in the home, long-term care facilities, and rehabilitation facilities.

Lift devices are relevant to this topic and do provide important support and assistance for transitioning and repositioning patients. These devices can also provide relief for nursing and health care staff when lifting or repositioning patients. However, studies and reviews limited to the efficacy of these devices have not been included in the scope of this topic brief.

## Considerations

- Patients with impaired mobility are at risk for a number of health complications, including pressure ulcers (commonly called bed sores), pneumonia, reduced quality of life, impaired functional status, increased risk for hospitalization and early death.
- Pressure ulcers, one of the most common complications of limited mobility, affect approximately 3 million adults in the US.<sup>1</sup> Incidence rates of pressure ulcers vary greatly with the health care settings. They range from 0.4 % to 38% in hospitals, from 2.2% to 23.9% in skilled nursing facilities, and from 0% to 17% for home health agencies. They affect up to 38% of hospital patients, 23.9% of nursing home patients and 17% of patients in in-home care.<sup>2</sup>
- Another related concern is that nurses, other health care workers, and family caregivers who are providing care for bedridden patients are at risk for back injury or musculoskeletal conditions from lifting and moving these patients. The increase in the prevalence of obesity among patients, may lead to an increase in the risk of back injury or musculoskeletal conditions for these health care workers and caregivers.
- To avoid pressure ulcers and other complications, the position of bedridden patients must be changed frequently. This process generally requires one or more nursing staff (or caregivers) but can be aided by specialty equipment such as special bedding, mattresses or lifting devices. Typical product solutions include high-specification foam mattresses or motorized, dynamic bed devices. High-specification mattresses are comprised of contoured foam or foam of different densities to alleviate pressure. Dynamic devices may incorporate technology that alternates the locations of pressure within the mattress or provides the ability to change the angles or levels of areas of the bed.
- A search of the literature identified two relevant AHRQ comparative effectiveness reviews, which were published in 2013, and addressed pressure ulcers, examining risk assessment, prevention and management of these complications. Both reviews located fair quality evidence regarding the use and efficacy of high specification foam mattresses over standard hospital mattresses and limited or low quality evidence regarding dynamic support surfaces. Evidence regarding repositioning was sparse and insufficient according to the reviews. Evidence supporting the efficacy of air-fluidized beds was moderate compared with other support surfaces.
  - Pressure Ulcer Risk Assessment and Prevention: Comparative Effectiveness. Comparative Effectiveness Review No. 87. (Prepared by Oregon Evidence-based Practice Center under Contract No. 290-2007-10057-I.) AHRQ Publication No. 12(13)-EHC148-EF. Rockville, MD: Agency for Healthcare Research and Quality. May 2013.
  - Pressure Ulcer Treatment Strategies: Comparative Effectiveness. Comparative Effectiveness Review No. 90. (Prepared by the Oregon Evidence-based Practice Center under Contract No. 290-2007-10057-I.) AHRQ Publication No. 13-EHC003-EF. Rockville, MD: Agency for Healthcare Research and Quality; May 2013.
- Although a search of the relevant literature found evidence for the efficacy of foam and standard mattresses in the prevention and treatment of pressure ulcers in patients, there is limited evidence regarding the use of these support surfaces and other associated outcomes such as HRQoL, functional

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<sup>1</sup>Lyder CH, Ayello EA. Pressure ulcers: a patient safety issue. In: Hughes RG, ed. Patient Safety and Quality: An Evidence-Based Handbook for Nurses. AHRQ Publication No. 08-0043. Rockville, MD: Agency for Healthcare Research and Quality; 2008:1-33.

<sup>2</sup> Cuddigan J, Berlowitz DR, Ayello EA. Pressure ulcers in America: prevalence, incidence, and implications for the future. Reston VA: National Pressure Ulcer Advisory Panel; 2001.

status, need for hospitalization, and morbidity/mortality. Concerning the impact of these mattresses on nursing and health care staff injury and chronic pain, research is also limited.

- Our search also identified a limited body of evidence about dynamic mattresses and their association with improved outcomes. The evidence for dynamic support surfaces appears to be too limited at this time to address this specific topic area.